

FORM PT0-1449 (modified)
 To: U.S. Department of Commerce
 (PM&S FORM PAT-1449)
 Patent and Trademark Office

Atty.
 Dkt. No.

M#

Client Ref.

273686

F00-219-US-DIV-3

**INFORMATION DISCLOSURE STATEMENT
 BY APPLICANT**

Applicant: **MANABE et al.**

#3 1 DS
 3-2-01

Div. of Appln. No.: **09/417,778**

R. Stokes

Filing Date: October 14, 1999

Examiner: Minh Loan Tran Group Art Unit: 2811

Date: OCTOBER 2, 2000

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SG	AR 5,278,433	1/1994	Manabe et al.			
	BR 4,844,989	07/89	Murdock			U.S. PRO
	CR 4,408,217	10/83	Kobayashi			10/02/00
	DR 4,268,842	05/81	Jacob et al.			10/02/00
	ER 5,005,057	04/91	Izumiya et al.			10/02/00
	FR 4,614,961	09/86	Khan et al.			10/02/00
	GR 4,153,905	05/79	Charmakedze et al.			10/02/00
	HR 4,855,249	08/89	Akasaki et al.			10/02/00
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	JR 4,945,548	08/90	Kotaki et al.			10/02/00
	KR 4,396,929	08/83	Ohki et al.			10/02/00
	LR 5,006,908	04/91	Natsuoka et al.			10/02/00
	MR 4,608,581	08/86	Bagrashvili et al.			10/02/00
	NR 4,473,938	10/84	Kobayashi et al.			10/02/00

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							Enclosed	No	Enclose	No
SG	OR 2-229475	09/1990	Japan					x		x
	PR 2-275682	11/1990	Japan					x		x
	QR 5-042785	04/1975	Japan					x		x
	RR 59-228776	12/1994	Japan					x		x
	SR 0 620 203 A1	10/1994	Europe	Nakahata				x		x
	TR 0-277597	08/1988	EPA					x		x
	UR 03-034549	02/1991	Japan	Toyoda				x		x
	VR 34549	02/1991	Japan	Hatano				x		x
	WR 4,006,449	09/1990	Germany	Manabe				x		x
SG	XR 57-018377	01/1982	Japan	KOBAYASHI				x		x

OTHER (Including in this order Author, Title, Periodical Name, Date, Pertinent Pages, etc.)

SG	YR	English Abstract of OKI Japanese Application Published 9/22/82 under No. 57-153479.
	ZR	I. Akasaki et al., "Effects of AlN Buffer Layer on Crystallographic Structure... by MOVPE", J. Crystal Growth 98 (1989) pp. 209-19.
	AAR	Liu et al., "Growth morphology and surface-acoustic-wave measurements of AlN films on Sapphire," Journal of Applied Physics, Vol. 46, No. 9, September 1975, pages 3703-3706.
	BBR	Ilegems et al. "Electrical properties of n-Type Vapor-growth Gallium Nitride", J. Phys. Chem. Solids., 1973, Vol. 34, pp. 885-895.

Examiner <i>SG</i>	Date Considered: <i>10/16/01</i>
*EXAMINER: Initial if citation considered, whether or not citation is in conformance with MPEP § 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to Applicant.	

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<i>SM</i>	AR	5,218,216	06/1993	Manabe			
	BR	5,247,533	09/1993	Okazaki et al.			
	CR	5,205,905	04/1993	Kotaki et al.			
	DR	5,079,184	01/1992	Hatano et al.			
<i>SM</i>	ER	5,076,860	12/1991	Ohba et al.			
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<i>SM</i>	MR	58-012381	01/1983	Japan	Yoneda				X		X
<i>SM</i>	NR	61-007671	01/1986	Japan	Kawabata				X		X
<i>SM</i>	OR	57-087184	05/1982	Japan	Tabuchi				X		X
<i>SM</i>	PR	57-153479	09/1982	Japan	Ooki				X		X
<i>SM</i>	QR	2-738329	03/1978	Germany	Jacob et al.				X		X
<i>SM</i>	RR	56-59699	05/1981	Japan	Ooki				X		X
<i>SM</i>	SR	34549	02/1991	Japan	Hatano				X		X
<i>SM</i>	TR	3-046018	09/1981	Germany	Kobayashi et al.				X		X

OTHER (Including in this order Author, Title, Periodical Name, Date, Pertinent Pages, etc.)

<i>SM</i>	UR	Koide et al. "Effect of an AlN Buffer layer on AlGaNa-A1203 Heteroepitaxial Growth by MOVPE", Japanese Journal of Crystal Growth 1986, Vol. 13, No. 4, pp. 218-225.		
<i>SM</i>	VR	Sayyah et al. "The Influence of TMA and SiH4 on the Incorporation Rate of GaNAlxGa1-xN Crystals Grown from TMG and NH3", Journal of Crystal Growth 77 (1986), pp. 424-429 North-Holland, Amsterdam.		
<i>SM</i>	WR	Bottka, et al., Silicon and beryllium doping of OMVPE Grown..., Journal of Crystal Growth 68 (1984) pp. 54-59, North-Holland Amsterdam		
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<i>SM</i>	YR	Koide et al., "Epitaxial Growth and Properties of Al _x Ga _{1-x} N by MOVPE, Reprinted from Journal of the Electrochemical Society, Vol. 133, No. 9, September 1996, pp. 1956-1960		
<i>SM</i>	ZR	Boulou et al., "Light emitting Diodes Based on GaN", Philips Tech. Rev., 37, 237-240 No. 9/10, 1977.		

Examiner

SM *Minh Tran*

Date Considered:

1/26/00

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MR	49-29771	7/1972	Japan	Kasano				x		x
NR	2623466	2/1990	Japan	Sassa et al.				x		x
OR	59-228776	6/1983	Japan	Maefutsu et al.				x		x
PR	60-173829	2/1984	Japan	Maefutsu et al.				x		x
QR	1-589351	05/1981	England							
RR	63-188977	08/1988	Japan							
SR	62-119196	05/1987	Japan							
TR	57-046669	10/1982	Japan							
UR	03-034549	02/1991	Japan							
VR	54-071589	06/1979	Japan	Toyoda						

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WR	English Abstract of OOKI Japanese Application Published 9/19/82 under No. 57-153479.			
XR	I. Akusuki et al., "Effects of AlN Buffer Layer on Crystallographic Structure... by MOVPE", J. Crystal Growth 98 (1989) pp. 209-19.			
YR	Sayyah, A Study of Growth Mechanisms and Electrical and Optical Properties of Epitaxial Al _x Ga _{1-x} N Layers Grown by Atmospheric Pressure Metalorganic Chemical Vapor Deposition, A Dissertation presented to Faculty of the Graduate School, University of Southern California, February 1986, pp. 125-136.			
ZR	Koide et al., Epitaxial Growth and Properties of Al _x Ga _{1-x} N by MOVPE, J. Electrochem. Soc.: SOLID-STATE SCIENCE AND TECHNOLOGY, Vol. 133, No. 9, September 1986, pp. 1956-1960.			

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S. Manabe et al.

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6/26/01

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SM	MR 58-046686	03/1983	Japan	Yoneda				x		x
	NR 54-071590	06/1979	Japan	Toyoda				x		x
	OR 02-081482	03/1990	Japan	Manabe				x		x
	PR 02-081483	03/1990	Japan	Manabe				x		x
	QR 02-081484	03/1990	Japan	Manabe				x		x
SM	RR									

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SM	SR	Masakiyo Matsumura, Semiconductor Devices, Chapter 2, Principle of Diodes, 2.1: pn junction and rectification, December 25, 1986, p. 13.			
	TR	Kiyoshi Takahashi, Semiconductor Engineering: Basic Characteristics of Semiconductor, Morikita Electric Engineering Series, Vol. 4, Chapter 14: Semiconductor Material Technics, 14:1: Forming of Semiconductor Material, August 1, 1975, p. 297.			
	UR	Hiroyuki Matsunami, Semiconductor Engineering, Chapter 2: Basic Characteristics of Semiconductor, March 25, 1983, pp. 18-31.			
	VR	Sano et al., Properties of III-V Nitride Semiconductors, Japanese Journal of Applied Physics, Vol. 52, No. 5, 1983, pp. 374-387.			
	WR	Miyoshi Haradome, Basics of Semiconductor Engineering, Chapter 8: Compound Semiconductor, 8:1, Conditions to be Semiconductor, August 30, 1967, p. 161.			
	XR	A.S. Grove, Physics and Technology of Semiconductor, Chapter 4: Basics of Semiconductor Physics, 1967, translated and published in Japan June 23, 1995, pp. 112-123.			

Examiner

S. Manabe

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	MR									
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<i>SM</i>	UR	Kazuyo Kadota, The Invention, 39 New Technics Selected by Japan Patent Office; Laser Technics, Vol. 94, No. 9 (the first volume); September 1997, pp. 42-49.
	VR	Pankove et al., Optical Absorption of GaN, Applied Physics Letters, Vol. 17, No. 5, September 1970, pp. 197-198.
	WR	Amano et al., Effects of the Buffer Layer in Metalorganic Vapour Phase Epitaxy of GaN on Sapphire Substrate, Thin Solid Films, 163, (1988), pp. 415-420.
	XR	Akasaki et al., Effects of AlN Buffer Layer on Crystallographic Structure and on Electrical and Optical Properties of GaN and Ga _{1-x} Al _x N(0 < x < 0.4) Films Grown on Sapphire Substrate by MOVPE, Journal of Crystal Growth 98 (1989), pp. 209-219.
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	AAR	Hiramatsu et al. "Effects of Buffer Layer in MOVPE Growth of GaN Film on Sapphire Substrate" Japanese Journal of Crystal Growth, 1988, Vol. 15, No. 3&4, pp. 334-342
<i>CM</i>	BBR	Elwell et al. "Crystal Growth of Gallium Nitride" Prog. Crystal Growth and Charact. 1988, vol. 17, pp. 53-78.
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	DDR	
	EER	

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